

<b><u>SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT</u></b>	<b><u>PAGES</u></b>	<b><u>PAGE</u></b>
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	DJG	

**OWNER/OPERATOR:**

ENGINEERED POLYMER SOLUTIONS, INC  
5501 EAST SLAUSON AVENUE  
LOS ANGELES, CA 90040

**EQUIPMENT LOCATION:**

SAME AS ABOVE

**PERMIT TO CONSTRUCT/OPERATE**

**APPLICATION NO. 499670**

**CHANGE OF CONDITION NO. 3 (PERMIT NO. F99080)**

**BY THE ADDITION OF:**

THE COMBUSTION CHAMBER TEMPERATURE SHALL BE MAINTAINED AT A MINIMUM OF **1,400** DEGREES FAHRENHEIT WHENEVER THE EQUIPMENT IT SERVES IS IN OPERATION.

**BY THE REMOVAL OF:**

THE COMBUSTION CHAMBER TEMPERATURE SHALL BE MAINTAINED AT A MINIMUM OF ~~1,450~~ DEGREES FAHRENHEIT WHENEVER THE EQUIPMENT IT SERVES IS IN OPERATION.

**APPLICATION NO. 499664**

**CHANGE OF CONDITION NO. 7 (PERMIT NO. F99081)**

**BY THE ADDITION OF:**

THE TOTAL HOURS FOR HEATING THIS TANK SHALL NOT EXCEED **87** HOURS IN ANY ONE CALENDAR MONTH.

**BY THE REMOVAL OF:**

THE TOTAL HOURS FOR HEATING THIS TANK SHALL NOT EXCEED ~~240 HOURS IN ANY CALENDAR YEAR OR 20~~ HOURS IN ANY ONE CALENDAR MONTH.

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**APPLICATION NO. 499663**

**CHANGE OF CONDITION NO. 4 (PERMIT NO. F96523)**

**BY THE ADDITION OF:**

MATERIALS USED IN THIS EQUIPMENT SHALL NOT CONTAIN ANY OF THE COMPOUNDS IDENTIFIED AS TOXIC AIR CONTAMINANTS IN RULE 1401 AS AMENDED **JUNE 5, 2009**, OTHER THAN:

- |                        |                   |
|------------------------|-------------------|
| a. ZYLENE              | CAS NO. 1330-20-7 |
| b. STYRENE             | CAS NO. 100-42-5  |
| c. ETHYLBENZENE        | CAS NO. 100-41-4  |
| d. ETHYLENE GLYCOL     | CAS NO. 107-21-1  |
| e. FORMALDEHYDE        | CAS NO. 50-00-0   |
| f. METHYL METHACRYLATE | CAS NO. 80-62-6   |

**CHANGE OF CONDITION NO. 5 (PERMIT NO. F96523)**

**BY THE ADDITION OF:**

THE QUANTITY OF MATERIAL PROCESSED IN TANK T-406 SHALL NOT EXCEED **18,000** GALLONS IN ANY ONE CALENDAR MONTH.

**BY THE REMOVAL OF:**

THE QUANTITY OF MATERIAL PROCESSED IN TANK T-406 SHALL NOT EXCEED ~~400,000 GALLONS IN ANY CALENDAR YEAR OR 8,333~~ GALLONS IN ANY ONE CALENDAR MONTH.

**CHANGE OF CONDITION NO. 6 (PERMIT NO. F96523)**

**BY THE ADDITION OF:**

THE QUANTITY OF MATERIAL PROCESSED IN TANK T-407 SHALL NOT EXCEED **1,500** GALLONS IN ANY ONE CALENDAR MONTH.

**BY THE REMOVAL OF:**

THE QUANTITY OF MATERIAL PROCESSED IN TANK T-407 SHALL NOT EXCEED ~~7,300 GALLONS IN ANY CALENDAR YEAR OR 608~~ GALLONS IN ANY ONE CALENDAR MONTH.

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**APPLICATION NO. 499662**

**CHANGE OF CONDITION NO. 7 (PERMIT NO. R-D07939)**

**BY THE ADDITION OF:**

THE TEMPERATURE OF THE MATERIAL IN THIS EQUIPMENT SHALL NOT EXCEED **200** DEGREES FAHRENHEIT.

**BY THE REMOVAL OF:**

THE TEMPERATURE OF THE MATERIAL IN THIS EQUIPMENT SHALL NOT EXCEED ~~120~~ DEGREES FAHRENHEIT.

**APPLICATION NO. 499661**

**CHANGE OF CONDITION NO. 3 (PERMIT NO. F96000)**

**BY THE ADDITION OF:**

THIS EQUIPMENT SHALL NOT BE USED FOR STORING ORGANIC LIQUIDS HAVING A VAPOR PRESSURE OF GREATER THAN **89.1 mm HG AT 68 DEGREE FAHRENHEIT.**

**BY THE REMOVAL OF:**

THIS EQUIPMENT SHALL NOT BE USED FOR STORING ORGANIC LIQUIDS HAVING A VAPOR PRESSURE OF GREATER THAN ~~1.721 PSI~~ AT ~~70~~ DEGREE FAHRENHEIT.

**APPLICATION NO. 499660**

**ADMINISTRATIVE CHANGE (PERMIT NO. F95906)**

**BY THE ADDITION OF:**

**Equipment Description**

**COOL TANK, T-506, 8'-0" DIA. X 8'-0" H., 3,000 GALLON CAPACITY.**

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**APPLICATION NO. 499658**

**MODIFICATION OF RESIN MANUFACTURING SYSTEM NO.3 (PERMIT NO. F95914)**

**BY THE ADDITION OF:**

**Equipment Description**

**Vacuum Pump.**

**Two vacuum receivers.**

**Two totes, 450 gallon capacity each.**

**Permit Conditions**

THIS EQUIPMENT SHALL NOT EMIT MORE THAN 225 POUNDS OF VOC EMISSION PER MONTH.

THE OPERATOR SHALL MAINTAIN ADEQUATE RECORDS TO VERIFY COMPLIANCE WITH CONDITION NO. 5 ABOVE. SUCH RECORDS SHALL BE KEPT ON THE PREMISES FOR AT LEAST TWO YEARS AND BE MADE AVAILABLE TO THE EXECUTIVE OFFICER OR HIS REPRESENTATIVE UPON REQUEST.

**APPLICATION NO. 499659**

**TITLE V PERMIT REVISION**

**APPLICATION NO. 499657**

**TITLE V PERMIT REVISION**

## **PERMIT TO CONSTRUCT/OPERATE**

**A/N 499670**

**Equipment Description:**

**AIR POLLUTION CONTROL SYSTEM CONSISTING OF:**

1. AFTERBURNER, HIRT, MODEL HIH-SM-3000X, SERIAL NO. 9881073, 4'-3" DIA. X 18'-8" L., DIRECT GAS FIRED, 7,260,000 BTU/HR.
2. WASTE HEAT BOILER, ABCO, MODEL 100-WHB, SERIAL NO. 9608-1, 4'-10" DIA. X 20'-6" L., 100 HP.

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3. SCRUBBER, SPRAY TYPE, VO19, 1'-4" DIA. X 10'-0" H., WITH A SEPARATION TANK, T-16, 8'-1" W. X 9'-7" L. X 5'-0" H., 2,950 GALLON CAPACITY AND A CIRCULATION PUMP.
4. TANK, VAPOR EXPANSION, T-15, 4'-0" DIA. X 5'-0" H., 500 GALLON CAPACITY, 7.5 HP.
5. TANK, VAPOR CONDENSATE, T-17, 8'-0" DIA X 8'-6"H., 3,760 GALLON CAPACITY.
6. EXHAUST SYSTEM WITH A 20 HP BLOWER VENTING THE FOLLOWING SOURCES: TWO ALKYD RESIN REACTORS, K2 AND K3, EACH WITH ONE CONDENSER, ONE SURGE TANK, AND ONE DECANTER TANK; FOUR RESIN THIN DOWN TANKS, T-401, T-402, T-403 AND T-404, EACH WITH ONE CONDENSER; ONE LATEX REACTOR, K5, WITH ONE CONDENSER; ONE POLYVINYL ACETATE PAOLYMERIZATION REACTOR, K6, WITH ONE CONDENSER; ONE WASTE WATER TREATMENT SYSTEM; THIRTEEN TANKS: ST-3 (T-803) OR TBD2, ST-8 (T-808) OR TBD4, T-406, T-407, T-501, T-504, T-601, T-802, T-804, T-807, T-810 OR TBD1, T-811 AND T-812.

**Conditions:**

1. OPERATION OF THIS EQUIPMENT SHALL BE CONDUCTED IN ACCORDANCE WITH ALL DATA AND SPECIFICATIONS SUBMITTED WITH THE APPLICATION UNDER WHICH THIS PERMIT IS ISSUED UNLESS OTHERWISE NOTED BELOW.
2. THIS EQUIPMENT SHALL BE PROPERLY MAINTAINED AND KEPT IN GOOD OPERATING CONDITION AT ALL TIMES.
3. THE OPERATOR SHALL OPERATE AND MAINTAIN THIS HIRT DIRECT FLAME THERMAL OXIDIZER ACCORDING TO THE FOLLOWING REQUIREMENTS:

THE COMBUSTION CHAMBER TEMPERATURE SHALL BE MAINTAINED AT A MINIMUM OF **1,400** ~~1,450~~ DEGREES FAHRENHEIT WHENEVER THE EQUIPMENT IT SERVES IS IN OPERATION.

THE OPERATOR SHALL OPERATE AND MAINTAIN A TEMPERATURE MEASURING AND RECORDING SYSTEM TO CONTINUOUSLY MEASURE AND RECORD THE COMBUSTION CHAMBER TEMPERATURE PURSUANT TO THE OPERATION AND MAINTENANCE REQUIREMENTS SPECIFIED IN 40 CFR PART 64.7. SUCH A SYSTEM SHALL HAVE AN ACCURACY OF WITHIN 1% OF THE TEMPERATURE BEING MONITORED AND SHALL BE INSPECTED, MAINTAINED, AND CALIBRATED ON AN ANNUAL BASIS IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS. THE TEMPERATURE INDICATING AND RECORDING SYSTEM SHALL BE IN OPERATION WHENEVER THE EQUIPMENT IT SERVES IS IN OPERATION.

FOR THE PURPOSE OF THIS CONDITION, A DEVIATION SHALL BE DEFINED AS WHEN A COMBUSTION CHAMBER TEMPERATURE OF LESS THAN **1,400** ~~1,450~~ DEGREES FAHRENHEIT OCCURS DURING NORMAL OPERATION OF THE EQUIPMENT IT SERVES. THE OPERATOR SHALL REVIEW THE RECORDS OF THE COMBUSTION CHAMBER TEMPERATURE ON A DAILY BASIS TO DETERMINE IF A DEVIATION OCCURS OR SHALL INSTALL AN ALARM SYSTEM TO ALERT THE OPERATOR WHEN A DEVIATION OCCURS.

WHENEVER A DEVIATION OCCURS, THE OPERATOR SHALL INSPECT THIS EQUIPMENT TO IDENTIFY THE CAUSE OF SUCH A DEVIATION, TAKE IMMEDIATE CORRECTIVE ACTION TO MAINTAIN THE COMBUSTION CHAMBER TEMPERATURE AT OR ABOVE **1,400** ~~1,450~~ DEGREES FAHRENHEIT, AND KEEP RECORDS OF THE DURATION AND CAUSE (INCLUDING UNKNOWN CAUSE, IF APPLICABLE) OF THE DEVIATION AND THE CORRECTIVE ACTION TAKEN.

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DJG

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ALL DEVIATIONS SHALL BE REPORTED TO THE AQMD PURSUANT TO THE REQUIREMENTS SPECIFIED IN 40 CFR PART 64.9 AND CONDITION NOS. 22 AND 23 IN SECTION K OF THIS PERMIT. THE REPORT SHALL INCLUDE THE TOTAL OPERATING TIME OF THIS EQUIPMENT AND THE TOTAL ACCUMULATED DURATION OF ALL DEVIATIONS FOR EACH SEMI-ANNUAL REPORTING PERIOD SPECIFIED IN CONDITION NO. 23 IN SECTION K OF THIS PERMIT.

THE OPERATOR SHALL SUBMIT AN APPLICATION WITH A QUALITY IMPROVEMENT PLAN (QIP) IN ACCORDANCE WITH 40 CFR PART 64.8 TO THE AQMD IF AN ACCUMULATION OF DEVIATIONS EXCEEDS 5 PERCENT DURATION OF THIS EQUIPMENT'S TOTAL OPERATING TIME FOR ANY SEMI-ANNUAL REPORTING PERIOD SPECIFIED IN CONDITION NO. 23 IN SECTION K OF THIS PERMIT. THE REQUIRED QIP SHALL BE SUBMITTED TO THE AQMD WITHIN 90 CALENDAR DAYS AFTER THE DUE DATE FOR THE SEMI-ANNUAL MONITORING REPORT.

THE OPERATOR SHALL INSPECT AND MAINTAIN ALL COMPONENTS OF THIS EQUIPMENT ON AN ANNUAL BASIS IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS.

THE OPERATOR SHALL KEEP ADEQUATE RECORDS IN A FORMAT THAT IS ACCEPTABLE TO THE AQMD TO DEMONSTRATE COMPLIANCE WITH ALL APPLICABLE REQUIREMENTS SPECIFIED IN THIS CONDITION AND 40 CFR PART 64.9 FOR A MINIMUM OF FIVE YEARS.

[RULE 1303(a)(1)-BACT, 1303(b)(2)-OFFSET, 3004(a)(4), 40CFR Part 64]

4. LIQUID WASTES SHALL NOT BE BURNED IN THE AFTERBURNER.
5. THIS EQUIPMENT SHALL BE DISCONNECTED FROM THE EXISTING STORAGE TANKS ST-3, ST-8 AND T-810 WHEN IT STARTS VENTING STORAGE TANKS TBD2, TBD4 AND TBD1.
6. THE TOTAL QUANTITY OF HAZARDOUS AIR POLLUTANT (HAP) EMISSIONS FROM THIS FACILITY SHALL NOT EXCEED 10 TONS PER 12 MONTH PERIOD OF A SINGLE HAP AND NOT MORE THAN 25 TONS PER 12 MONTH PERIOD OF ALL HAP COMBINED.
7. RECORDS SHALL BE MAINTAINED MONTHLY TO DEMONSTRATE COMPLIANCE WITH CONDITION 5, HAP EMISSIONS SHALL BE CALCULATED FOR THE PRECEDING 12 MONTH PERIOD BY THE 15<sup>TH</sup> DAY OF THE FOLLOWING MONTH. EMISSIONS SHALL BE CALCULATED USING "PREFERRED AND ALTERNATIVE METHODS FOR ESTIMATING AIR EMISSIONS FROM PAINT AND INK MANUFACTURING FACILITIES, U.S. ENVIRONMENTAL AGENCY, EMISSION INVENTORY IMPROVEMENT PROGRAM, VOLUME II; CHAPTER 8, MARCH 1998" OR A MORE RECENT VERSION AND A PROTOCOL APPROVED BY THE DISTRICT.
8. THE OPERATOR SHALL MAINTAIN ALL RECORDS AND SUPPORTING DOCUMENTS TO VERIFY COMPLIANCE WITH CONDITIONS NO. 3, 5, 6 AND 7 ABOVE. THE RECORDS SHALL BE MAINTAINED FOR AT LEAST FIVE YEARS AND MADE AVAILABLE TO THE AQMD PERSONNEL UPON REQUEST, AT MINIMUM THE MOST RECENT TWO YEARS OF RECORDS SHALL BE RETAINED ON SITE.

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## PERMIT TO CONSTRUCT/OPERATE

A/N 499664

### Equipment Description:

STORAGE TANK, T-904, FIXED ROOF, 10'-0" DIA. X 12'-0", 6,715 GALLONS CAPACITY, WITH A 5 H.P. AGITATOR AND INTERNAL HEATING COILS.

### Conditions:

1. OPERATION OF THIS EQUIPMENT SHALL BE CONDUCTED IN ACCORDANCE WITH ALL DATA AND SPECIFICATIONS SUBMITTED WITH THE APPLICATION UNDER WHICH THIS PERMIT IS ISSUED UNLESS OTHERWISE NOTED BELOW.
2. THIS EQUIPMENT SHALL BE PROPERLY MAINTAINED AND KEPT IN GOOD OPERATING CONDITION AT ALL TIMES.
3. MATERIALS USED AT THIS EQUIPMENT SHALL NOT CONTAIN ANY OF THE COMPOUNDS IDENTIFIED AS TOXIC AIR CONTAMINANTS IN RULE 1401 AS AMENDED ON MARCH 7, 2008.
4. THE QUANTITY OF MATERIAL PROCESSED IN THIS EQUIPMENT SHALL NOT EXCEED 300,000 GALLONS IN ANY CALENDAR YEAR OR 25,000 GALLONS IN ANY ONE CALENDAR MONTH.
5. THIS TANK CAN ONLY STORE URETHANE MODIFIED ALKYD RESIN PRODUCT, ITS SOLVENT CONCENTRATION SHALL NOT EXCEED 50 PERCENT BY WEIGHT.
6. A TEMPERATURE GAUGE SHALL BE INSTALLED TO MONITOR THE TEMPERATURE OF MATERIALS STORED IN THIS TANK.
7. THE TANK TEMPERATURE SHALL NOT EXCEED 160 DEGREES F WHEN TRANSFERING MATERIAL TO A DELIVERY TRUCK.
8. THE TOTAL HOURS FOR HEATING THIS TANK SHALL NOT EXCEED ~~240 HOURS IN ANY CALENDAR YEAR OR~~ 87 HOURS IN ANY ONE CALENDAR MONTH.

### Periodic Monitoring

9. THE OPERATOR SHALL KEEP RECORDS, IN A MANNER APPROVED BY THE DISTRICT, FOR THE FOLLOWING PARAMETERS OR ITEMS:
  - i. DAILY TEMPERATURE OF THE MATERIAL STORED IN THE TANK.
  - ii. CONDITION NO.8.

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## PERMIT TO CONSTRUCT/OPERATE

A/N 499663

### Equipment Description:

ALKYD-VINYL COPOLYMERIZATION SYSTEM CONSISTING OF:

1. TANK 406, COPOLYMER MONOMER FEED TANK, 7'-0" DIA. X 11'-8", 2500 GALLON CAPACITY.
2. TANK 407, COPOLYMER CATALYST FEED TANK, 3'-5" DIA X 8'-4" H., 500 GALLON CAPACITY.
3. THIN DOWN TANK, T-401, 8'-0" DIA. X 12'-3"H., 3,500 GALLON CAPACITY WITH A 7 ½ H.P. AGITATOR AND A CONDENSER, SHELL AND TUBE TYPE, 1'-1" DIA. X 11'-6" L., 100 SQ.FT TOTAL EFFECTIVE HEAT TRANSFER AREA, COMMON TO KETTLE NO.2.
4. THIN DOWN TANK, T-402, 9'-0" DIA. X 15'-0"H., 6,551 GALLON CAPACITY WITH A 10 H.P. AGITATOR AND A CONDENSER, SHELL AND TUBE TYPE, 1'-3" DIA. X 7'-0" L., 200 SQ.FT TOTAL EFFECTIVE HEAT TRANSFER AREA, COMMON TO KETTLE NO.2.
5. THIN DOWN TANK, T-403, 10'-0" DIA. X 18'-0"H., 10,000 GALLON CAPACITY WITH A 75 H.P. AGITATOR AND A CONDENSER, SHELL AND TUBE TYPE, 1'-6" DIA. X 17'-6" L., 100 SQ.FT TOTAL EFFECTIVE HEAT TRANSFER AREA, COMMON TO KETTLE NO.3.

### Conditions:

1. OPERATION OF THIS EQUIPMENT SHALL BE CONDUCTED IN ACCORDANCE WITH ALL DATA AND SPECIFICATIONS SUBMITTED WITH THE APPLICATION UNDER WHICH THIS PERMIT IS ISSUED UNLESS OTHERWISE NOTED BELOW.
2. THIS EQUIPMENT SHALL BE PROPERLY MAINTAINED AND KEPT IN GOOD OPERATING CONDITION AT ALL TIMES.
3. THIS EQUIPMENT SHALL NOT BE USED FOR STORING ORGANIC LIQUIDS HAVING A VAPOR PRESSURE OF GREATER THAN 0.561 PSI AT 70 DEGREE FAHRENHEIT.
4. MATERIALS PROCESSED IN THIS EQUIPMENT SHALL NOT CONTAIN ANY OF THE COMPOUNDS IDENTIFIED TOXIC AIR CONTAMINANTS IN RULE 1401, TABLE 1, WITH AN EFFECTIVE DATE OF MARCH 7, 2008 OR EARLIER OTHER THAN:
 

a. XYLENE	CAS NO. 1330-20-7
b. STYRENE	CAS NO. 100-42-5
c. ETHYLBENZENE	CAS NO. 100-41-4
d. ETHYLENE GLYCOL	CAS NO. 107-21-1
e. FORMALDEHYDE	CAS NO. 50-00-0
f. METHYL METHACRYLATE	CAS NO. 80-62-6



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5. THE QUANTITY OF MATERIAL PROCESSED IN TANK T-406 SHALL NOT EXCEED ~~100,000 GALLONS IN ANY CALENDAR YEAR OR 8,333~~ **18,000** GALLONS IN ANY ONE CALENDAR MONTH.
6. THE QUANTITY OF MATERIAL PROCESSED IN TANK T-407 SHALL NOT EXCEED ~~7,300 GALLONS IN ANY CALENDAR YEAR OR 608~~ **1,500** GALLONS IN ANY ONE CALENDAR MONTH.
7. THIS EQUIPMENT SHALL NOT BE OPERATED UNLESS IT IS VENTED TO AIR POLLUTION CONTROL EQUIPMENT WHICH IS IN FULL USE AND WHICH HAS BEEN ISSUED AN OPERATING PERMIT BY THE EXECUTIVE OFFICER.

**Emissions and Requirements:**

8. THIS EQUIPMENT IS SUBJECT TO THE APPLICABLE REQUIREMENTS OF THE FOLLOWING RULES AND REGULATIONS:

VOC: RULE 1141

## **PERMIT TO CONSTRUCT/OPERATE**

**A/N 499662**

**Equipment Description:**

STORAGE TANK, NO. TFX2, 5,000 GALLON CAPACITY, 7'-11" DIA. X 14'-0"L., WITH AN AGITATOR AND INTERNAL STEAM HEATING COILS.

**Conditions:**

1. OPERATION OF THIS EQUIPMENT SHALL BE CONDUCTED IN ACCORDANCE WITH ALL DATA AND SPECIFICATIONS SUBMITTED WITH THE APPLICATION UNDER WHICH THIS PERMIT IS ISSUED UNLESS OTHERWISE NOTED BELOW.
2. THIS EQUIPMENT SHALL BE PROPERLY MAINTAINED AND KEPT IN GOOD OPERATING CONDITION AT ALL TIMES.
3. THIS EQUIPMENT SHALL STORE COPOLYMER RESIN, SOLVENT CONCENTRATION NOT TO EXCEED 40 PERCENT BY WEIGHT ONLY.
4. THE MAXIMUM QUANTITY OF COPOLYMER RESIN FILLED INTO THIS EQUIPMENT SHALL NOT EXCEED 5,000 GALLONS PER DAY.
5. THE OPERATOR SHALL MAINTAIN ALL RECORDS AND SUPPORTING DOCUMENTS TO VERIFY COMPLIANCE WITH CONDITIONS NO. 3 AND 4 ABOVE. RECORDS SHALL BE MAINTAINED FOR AT LEAST FIVE YEARS AND MADE AVAILABLE TO THE AQMD PERSONNEL UPON REQUEST, AT MINIMUM THE MOST RECENT TWO YEARS OF RECORDS SHALL BE RETAINED ON SITE.
6. THE OPERATOR SHALL INSTALL AND MAINTAIN A TEMPERATURE GAUGE TO MONITOR THE TEMPERATURE OF MATERIALS STORED IN THIS EQUIPMENT.
7. THE MAXIMUM TEMPERATRE OF THE MATERIAL STORED IN THIS EQUIPMENT SHALL NOT EXCEED **200** ~~420~~ DEGREES FARHENHEIT.

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Periodic Monitoring:

8. THE OPERATOR SHALL KEEP RECORDS, IN A MANNER APPROVED BY THE DISTRICT, FOR THE DAILY TEMPERATURE OF THE MATERIAL STORED IN THE TANK.

## PERMIT TO CONSTRUCT/OPERATE

A/N 499661

### Equipment Description:

STORAGE TANK, NO. T-802, FIXED ROOF, 8'-0" DIA. X 21'-0" H., 8,000 GALLON CAPACITY.

### Conditions:

1. OPERATION OF THIS EQUIPMENT SHALL BE CONDUCTED IN ACCORDANCE WITH ALL DATA AND SPECIFICATIONS SUBMITTED WITH THE APPLICATION UNDER WHICH THIS PERMIT IS ISSUED UNLESS OTHERWISE NOTED BELOW.
2. THIS EQUIPMENT SHALL BE PROPERLY MAINTAINED AND KEPT IN GOOD OPERATING CONDITION AT ALL TIMES.
3. THIS EQUIPMENT SHALL NOT STORE ORGANIC LIQUIDS WITH A VAPOR PRESSURE GREATER THAN **89.1 mmHG 4.724 PSIA** AT **68 70** DEGREES FAHRENHEIT.
4. MATERIALS STORED IN THIS EQUIPMENT SHALL NOT CONTAIN ANY OF THE COMPOUNDS IDENTIFIED TOXIC AIR CONTAMINANTS IN RULE 1401, TABLE 1, WITH AN EFFECTIVE DATE OF MARCH 7, 2008 OR EARLIER OTHER THAN:
  - a. VINYL ACETATE CAS NO. 108-05-4
5. THE QUANTITY OF MATERIAL PROCESSED IN THIS EQUIPMENT SHALL NOT EXCEED 1,479,599 GALLONS IN ANY CALENDAR YEAR OR 123,300 GALLONS IN ANY ONE CALENDAR MONTH.
6. THIS EQUIPMENT SHALL NOT BE OPERATED UNLESS IT IS VENTED ONLY TO AIR POLLUTION CONTROL EQUIPMENT WHICH IS IN FULL USE AND WHICH HAS BEEN ISSUED A PERMIT BY THE EXECUTIVE OFFICER.
7. THIS EQUIPMENT SHALL BE FILLED BY THE USE OF A SUBMERGED FILLTUBE ONLY.

### Periodic Monitoring

8. THE OPERATOR SHALL KEEP RECORDS, IN A MANNER APPROVED BY THE DISTRICT, FOR THE FOLLOWING PARAMETER(S) OR ITEM(S):
  - A. THE NAME OF ORGANIC LIQUID STORED
  - B. THE VAPOR PRESSURE OF EACH ORGANIC LIQUID STORED.

[RULE 3004 (a)(4)]

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**Emissions and Requirements:**

9. THIS EQUIPMENT IS SUBJECT TO THE APPLICABLE REQUIREMENTS OF THE FOLLOWING RULES AND REGULATIONS:

VOC: RULE 1141

## **PERMIT TO CONSTRUCT/OPERATE**

**A/N 499660**

**Equipment Description:**

LATEX EMULSION POLYMERIZATION SYSTEM CONSISTING OF:

1. CHARGE TANK, T-505, 3'-6" DIA X 4'-2" H, 300 GALLON CAPACITY WITH A ¾ HP AGITATOR.
2. WEIGH TANK, T-504, 5'-6" DIA X 6'-0" H, 1,100 GALLON CAPACITY WITH A 3 HP AGITATOR.
3. WEIGH TANK, T-501, 7'-0" DIA X 9'-0" H, 2,500 GALLON CAPACITY WITH A ¾ HP AGITATOR.
4. WEIGH TANK, T-502, OXIDIZING CATALYST, 2'-0" DIA X 3'-0" H, 250 GALLON CAPACITY WITH A ¾ HP AGITATOR.
5. WEIGH TANK, T-503, REDUCING CATALYST, 2'-0" DIA X 3'-0" H, 250 GALLON CAPACITY WITH A ¾ HP AGITATOR.
6. REACTOR, K-5, 8'-0" DIA X 10'-6" H, 3,000 GALLON CAPACITY WITH INTERNAL WATER COOLING/HEATING COILS AND A 20 HP AGITATOR.
7. REFLUX CONDENSER, 1'-5" DIA X 20'-0" L, 550 SQUARE FEET TOTAL HEAT TRANSFER AREA.
8. NEUTRALIZATION TANK, T-514, 9'-0" DIA X 13'-8" H, 5,500 GALLON CAPACITY WITH A 5 HP AGITATOR.
9. **COOL TANK, T-506, 8'-0" DIA X 8'-0" H., 3,000 GALLON CAPACITY.**

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**Conditions:**

1. OPERATION OF THIS EQUIPMENT SHALL BE CONDUCTED IN ACCORDANCE WITH ALL DATA AND SPECIFICATIONS SUBMITTED WITH THE APPLICATION UNDER WHICH THIS PERMIT IS ISSUED UNLESS OTHERWISE NOTED BELOW.
2. THIS EQUIPMENT SHALL BE PROPERLY MAINTAINED AND KEPT IN GOOD OPERATING CONDITION AT ALL TIMES.
3. THIS EQUIPMENT SHALL NOT BE OPERATED UNLESS IT IS VENTED ONLY TO AIR POLLUTION CONTROL EQUIPMENT WHICH IS IN FULL USE AND WHICH HAS BEEN ISSUED A PERMIT BY THE EXECUTIVE OFFICER.

**Emissions and Requirements:**

4. THIS EQUIPMENT IS SUBJECT TO THE APPLICABLE REQUIREMENTS OF THE FOLLOWING RULES AND REGULATIONS:

VOC:            RULE 1141

## **PERMIT TO CONSTRUCT/OPERATE**

**A/N 499658**

**Equipment Description:**

RESIN MANUFACTURING SYSTEM NO. 3 CONSISTING OF:

1. REACTOR, 8'-3" DIA. X 12'-6" H. GAS-FIRED TYPE WITH A 30 H.P. AGITATOR AND A 10 H.P. COMBUSTION AIR BLOWER.
2. PACKED COLUMN, 3'-0" DIA. X 14'-5" H.
3. CONDENSER, SHELL AND TUBE TYPE, 1'-6" DIA. X 17'-6" H.
4. DECANTER, 3'-0" DIA. X 5'-0" H.
5. TANK, SURGE, 2'-0" DIA. X 3'-0" H., WITH A 1 ½ H.P. CONDENSATE PUMP.
6. TANK, THIN DOWN, T-403, 10'-0" DIA. X 18'-0" H., 10,000 GALLON CAPACITY WITH A 75 H.P. AGITATOR AND A CONDENSER, SHELL AND TUBE TYPE, 1'-6" DIA. X 17'-6" L., 100 SQ. FT. TOTAL EFFECTIVE HEAT TRANSFER AREA.
7. TANK, THIN DOWN, T-404, 10'-0" DIA. X 18'-0" H., 8,000 GALLON CAPACITY WITH A 25 H.P. AGITATOR AND A CONDENSER, SHELL AND TUBE TYPE, 1'-6" DIA. X 17'-6" L., 100 SQ. FT. TOTAL EFFECTIVE HEAT TRANSFER AREA. (COMMON TO SYSTEMS 2 AND 3).
8. PUMP, VACUUM, NASH, SIZE TS-7, TEST NO. 62-6597 (COMMON).
9. FILTER PRESS, SHRIVER, PLATE AND FRAME TYPE, SIZE 24" X 24".

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10. TANK, MIX, FILTER AID, 2'-3" DIA. X 3'-6" H., 104 GALLON, WITH A ¾ H.P. AGITATOR (COMMON TO SYSTEMS 2 AND 3).
11. VAPOR RETURN LINE, 2'-0" DIA. X 50'-0" L., STAINLESS STEEL PIPR, WITH A 10 FOOT FLEXIBLE HOSE, A TRUCK T-FITTING, A CAMLOC (COMMON TO SYSTEMS 2 AND 3).
12. **VACUUM PUMP**
13. **TWO VACUUM RECEIVERS**
14. **TWO TOTES, 450 GALLON CAPACITY EACH.**

Conditions:

1. OPERATION OF THIS EQUIPMENT SHALL BE CONDUCTED IN ACCORDANCE WITH ALL DATA AND SPECIFICATIONS SUBMITTED WITH THE APPLICATION UNDER WHICH THIS PERMIT IS ISSUED UNLESS OTHERWISE NOTED BELOW.
2. THIS EQUIPMENT SHALL BE PROPERLY MAINTAINED AND KEPT IN GOOD OPERATING CONDITION AT ALL TIMES.
3. THIS EQUIPMENT SHALL NOT BE OPERATED UNLESS IT IS VENTED ONLY TO AIR POLLUTION CONTROL EQUIPMENT WHICH IS IN FULL USE AND WHICH HAS BEEN ISSUED A PERMIT BY THE EXECUTIVE OFFICER.
4. THIS EQUIPMENT SHALL COMPLY WITH THE REQUIREMENTS OF RULE 1141.
5. THIS EQUIPMENT SHALL EMIT NO MORE THAN 225 POUNDS OF VOC EMISSION PER MONTH.
6. THE OPERATOR SHALL MAINTAIN ADEQUATE RECORDS TO VERIFY COMPLIANCE WITH CONDITION NO. 5 ABOVE. SUCH RECORDS SHALL BE KEPT ON THE PREMISES FOR AT LEAST TWO YEARS AND BE MADE AVAILABLE TO THE EXECUTIVE OFFICER OR HIS REPRESENTATIVE UPON REQUEST.

**Emissions and Requirements:**

7. THIS EQUIPMENT IS SUBJECT TO THE APPLICABLE REQUIREMENTS OF THE FOLLOWING RULES AND REGULATIONS:
  - VOC: RULE 1141
  - CO: 2000 PPMV, RULE 407
  - PM: 0.1 GR/SCF, RULE 409
  - PM: RULE 404, SEE APPENDIX B FOR EMISSION LIMITS

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## **BACKGROUND:**

Engineered Polymer Solutions (EPS) is a facility engaged in manufacturing resins of polyurethane, alkyd, and unsaturated polyesters for paints and coatings. EPS is a Title V company but is not in the RECLAIM program. EPS received their Title V Permit in January 2009.

Engineered Polymer Solutions Inc. has submitted seven (7) applications for the following reasons shown below.

- Application No. 499658** Modification of Resin Manufacturing System (RMS) No. 3. The company is requesting to add five (5) pieces of equipment to their existing RMS No.3 which will allow them to process a new resin called "Coalescer". RMS No. 3 currently has the capability to produce Urethanes, Alkyds, and Polyester resins. EPS has indicated in their application package that they are NOT requesting an increase of VOC emission from this system as a result of introducing this new resin. Therefore, since this system does not have a VOC maximum condition on the permit, the company has submitted production records and VOC levels for a representative period of time in order to establish a maximum monthly VOC limit which will be incorporated as a permit condition on the revised permit.
- Application No. 499660** Administrative change to Latex Emulsion Polymerization system K-5. The company is requesting to add a "cool tank" to the permit description. This equipment is exempt from a written permit per Rule 219 but the company would like to have it as part of the K-5 permit description.
- Application No. 499661** Administrative change to Storage Tank T-802. The company is requesting to change the vapor pressure notation from "psi" to "mmHg" at 68 degrees for condition no. 3.
- Application No. 499662** Change of condition to Storage Tank TFX2. The company is requesting to increase the temperature of the material inside this tank from 120 degrees Fahrenheit to 200 degrees Fahrenheit in condition no. 6.
- Application No. 499663** Change of condition to Alkyd-Vinyl Copolymerization system. The company is requesting to add four (4) additional toxic air contaminants (TAC) to the current list in condition no. 4. The company has also requested to increase the annual throughput for Tank 406 and 407 from 100,000 gallons per year to 216,000 gallons per year and 7,300 gallons per year to 18,000 gallons per year respectively.
- Application No. 499664** Change of condition to Storage Tank T-904. The company is requesting to change number of hours the tank is allowed to be at 160 degrees Fahrenheit. The hours will increase from 240 per year to 1,040 per year and 20 hours per month to 87 hours per week. The material is heated to allow it to flow with less effort during shipment and delivery operations.

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**Application No. 499670**

Change of condition to Air Pollution Control System. The company is requesting to change the temperature in the combustion chamber of the thermal oxidizer from 1450 degrees Fahrenheit to 1400 degrees Fahrenheit in condition no. 3. Explanation can be seen in emission calculation section.

**Rule 301 fees:** The filing fee for each above application is summarized below:

Application No. 499657 - Title V Permit Revision	\$843.40
Application No. 499658 - P/C-P/O (Schedule D)	\$4,478.51
50% Expedited Permit Processing	\$2,239.26
Application No. 499659 - Title V Permit Revision	\$843.40
Application No. 499660 – Admin Change (Schedule D)	\$670.50
50% Expedited Permit Processing	\$335.25
Application No. 499661 - P/C-P/O (Schedule C)	\$670.50
50% Expedited Permit Processing	\$335.25
Application No. 499662 - P/C-P/O (Schedule A)	\$1,287.22
50% Expedited Permit Processing	\$643.61
Application No. 499663 - P/C-P/O (Schedule D)	\$3,008.18
50% Expedited Permit Processing	\$1,504.09
Application No. 499664 - P/C-P/O (Schedule A)	\$1,287.22
50% Expedited Permit Processing	\$643.61
Application No. 499670 – Admin Change (Schedule D)	\$670.50
50% Expedited Permit Processing	\$335.25
<b>TOTAL FEES PAID</b>	<b>\$19,795.75</b>

**PROCESS DESCRIPTION:**

The manufacturing of urethane, alkyd, and polyester resins is performed in a batch process. Normally, reactions take place between polyhydric alcohols and polybasic acids at a temperature of 450°F. The reactor is heated by a gas fired heater. The vapors and steam produced are passed through a packed column where they are partially condensed and then put through a water-cooled condenser. The condensate returns through a seal leg to a decanter where the water and solvents are settled by differential settling. The solvent is returned to the reactor or is pumped as reflux to the packed column. The reaction cycle normally takes 12 to 16 hours.

When the reaction is completed, the hot urethanes/alkyds and polyesters are transferred to a thin down vessel filled with a solvent of proper composition. In the thin down tank, the resins are thinned down to resin concentrations ranging from 30 to 70% by weight. The hot alkyd transfer is usually accomplished in about 30 minutes. The vapors evolved during the transfer are condensed. The thin down tank is provided with coils for control of thin down temperature during the cutting operation.

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After being thinned to the desired consistency, the resins are passed through a filter. The finished resin can then be cold blended with other materials. The control of the acid vapors from the reactors and the thin down tanks is accomplished by venting to an acid scrubber. The exhaust stream from the scrubber is then vented to a thermal oxidizer to remove volatile organic compounds.

### **EMISSION CALCULATIONS:**

Operating Schedule:	Average	16 hrs/day	6 days/wk	52 wks/yr
	Maximum	24 hrs/day	7 days/wk	52 wks/yr

### **Application No. 499658**

The addition of five pieces of equipment to the Resin Manufacturing System (K-3) No. 3 is being requested in order to produce a new resin called "Coalescer". The company has indicated in their application submittal the resultant VOC emission level from the previous mode of operation will NOT change; only the nature of the product mix to be manufactured in K-3 will vary. It is the purpose of this emission calculation to establish a VOC emission level from the previous mode of operation to establish a base line emission level. A base line or monthly maximum emission from the permitted source (as required in Rule 1313) is necessary in order to determine in the future if there are emission increases or emission decreases due to a permit modification. This permit unit has been operating since inception without a monthly emission condition limit.

District Regulation XIII has established a calculation procedure for determining the offset requirements under Rule 1306(d). Rule 1306(d)(2) specifies that net emission increase from the modification of an existing source shall be calculated pursuant to Rule 1306(b) which is the post-modification PTE minus either (A) the permitted or allowable pre-modification PTE or (B) the actual emissions calculated pursuant to Rule 1306(c)(1) if the source was never subject to Rule 213 or Regulation XIII. The District NSR database includes the PTE for VOC emissions from this resin manufacturing system. However, due to the long and complicated NSR history of this facility, it is difficult to verify the basis of the VOC PTE for this system. As a result, the company has been requested to provide the production data for the years of 2002 through 2008 so that the District can try to establish the VOC PTE for this system. The following table summarizes the monthly production data for each of the years between 2002 and 2008.



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**CHECK BY****Table 1 - K-3 Production History by Month and Year (Pounds of Product Produced)**

Month	Year						
	2002	2003	2004	2005	2006	2007	2008
January	899,890	944,943	652,160	660,318	893,925	471,996	496,150
February	871,683	646,301	456,332	628,022	884,604	909,681	595,495
March	972,188	790,336	852,080	581,887	597,960	537,394	542,907
April	1,063,988	711,934	786,179	545,852	728,444	516,067	666,105
May	1,076,169	1,020,866	785,283	552,048	1,049,324	908,682	629,239
June	1,202,130	1,021,459	927,569	669,295	1,171,860	793,340	696,327
July	948,430	841,359	846,517	740,927	968,315	759,901	853,176
August	603,961	889,771	742,823	629,282	597,445	852,602	652,839
September	861,615	967,771	545,656	622,244	504,454	629,822	423,590
October	1,096,467	973,578	680,580	643,347	422,636	627,612	338,575
November	784,532	535,706	617,523	623,175	534,437	539,102	380,401
December	657,540	474,252	666,953	564,799	416,383	534,156	430,708
<b>TOTAL</b>	<b>11,038,593</b>	<b>9,818,276</b>	<b>8,559,655</b>	<b>7,461,196</b>	<b>8,769,787</b>	<b>8,080,355</b>	<b>6,705,512</b>

The above data shows that the company had their highest production month in June of 2002 and their highest production year was also 2002. Comparing the yearly production of 2008 to 2002 shows a 40% decline. The company also submitted yearly production records for 2006 through 2008 and corresponding emission levels for materials produced in this system.

After considerable correspondence from the District to the company, it was agreed upon that the District would consider using the highest production month from the production years of 2002 through 2008 as the PTE for VOC emissions from this system. The company submitted the computation of the VOC emission level that resulted from the production month of June of 2002. The calculation is shown below:

A summary of the production levels and corresponding emission is shown below for each of the last three years:

**2006 Production Year**

Product Type	Product Pounds	Gallons*	lbs VOC/gal	lbs VOC/yr
Acrylic latex	0	0	6.05E-04	0
Acrylic Vinyl & resin alkyd	56,964	6,624	2.01E-03	13
Long chain alkyd	4,164,797	484,279	1.49E-03	722
Polyester	1,596,797	175,384	1.45E-03	254
Unsaturated resin poly	1,699,591	184,738	1.41E-03	260
Urethane	154,357	19,789	2.48E-04	5
Water reducible alkyd	1,375,182	156,093	2.14E-03	334
<b>TOTAL</b>	<b>9,046,886</b>	<b>1,026,907</b>	<b>1.55E-03</b>	<b>1,588</b>

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<b>Product Type</b>	<b>Product Pounds</b>	<b>Gallons*</b>	<b>lbs VOC/gal</b>	<b>lbs VOC/yr</b>
Acrylic latex	0	0	6.05E-04	0
Acrylic Vinyl & resin alkyd	59,289	6,894	2.01E-03	14
Long chain alkyd	3,049,323	354,572	1.49E-03	528
Polyester	1,161,792	127,669	1.45E-03	185
Unsaturated resin poly	1,690,703	183,772	1.41E-03	259
Urethane	0	0	2.48E-04	0
Water reducible alkyd	2,205,289	250,317	2.14E-03	536
<b>TOTAL</b>	<b>8,166,396</b>	<b>923,225</b>	<b>1.65E-03</b>	<b>1,522</b>

**2008 Production Year**

<b>Product Type</b>	<b>Product Pounds</b>	<b>Gallons*</b>	<b>lbs VOC/gal</b>	<b>lbs VOC/yr</b>
Acrylic latex	23,676	2,690	6.05E-04	2
Acrylic Vinyl & resin alkyd	0	0	2.01E-03	0
Long chain alkyd	2,229,445	259,238	1.49E-03	386
Polyester	883,403	97,077	1.45E-03	141
Unsaturated resin poly	1,619,151	175,995	1.41E-03	248
Urethane	45,093	5,781	2.48E-04	1
Water reducible alkyd	2,002,607	227,311	2.14E-03	486
<b>TOTAL</b>	<b>6,803,375</b>	<b>765,402</b>	<b>1.65E-03</b>	<b>1,264</b>

\* The corresponding gallons was calculated by multiplying the pounds of product by the density of the product. The density values for each product line can be viewed in the Appendix.

It should be noted that the VOC emission points from this system are vented to a thermal oxidizer that has been source tested and has been shown to have a control efficiency of 98.7%. The addition of the new equipment to this system will not cause the number of emission points to increase. Any VOC emission from this new equipment will be routed back to the system where it will be picked up and sent to the control system from one of the existing emission points.

To provide the company with operating flexibility in the future from being able to increase their production if their VOC content of a product line decreases is to use a VOC emission limit as a condition rather than a throughput limit. This however will require the company to keep records of their monthly production for each product and calculate the corresponding VOC level from the making of that product. The VOC emission from the monthly production output will then be compared to the monthly VOC limit in the permit to determine compliance.

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To determine an emission factor (pounds of VOC per pound of product produced) to be used to derive a monthly maximum emission condition for this permitted source the VOC emission level for each of the three years of production (2006, 2007, and 2008) can be compared to the corresponding production levels. These values are shown below:

<b>YEAR</b>	<b>VOC emission level lbs/year</b>	<b>Product Produced lbs/year</b>	<b>Emission Factor (lbs VOC/lb product)</b>
2006	1,588 lbs/yr	9,046,886 lbs/yr	0.000176 lbs VOC/lb product
2007	1,522 lbs/yr	8,166,396 lbs/yr	0.000186 lbs VOC/lb product
2008	1,264 lbs/yr	6,803,375 lbs/yr	0.000186 lbs VOC/lb product
<b>Average Emission Factor</b>	<b>4,374 lbs/yr</b>	<b>24,016,657 lbs/yr</b>	<b>0.000182 lbs VOC/lb product</b>
<b>Maximum Emission Factor</b>			<b>0.000186 lbs VOC/lb product</b>

Using the maximum emission factor of 0.000186 lbs VOC /lb product, and using the maximum monthly production value of 1,202,130 lbs product from June of 2002, a maximum emission level condition can be derived which is shown below:

$$0.000186 \text{ lbs VOC/lb product} \times 1,202,130 \text{ lbs product/month} = \mathbf{225 \text{ lbs VOC/month}}$$

Therefore, this emission value will be used as the maximum monthly emission condition for this permit unit. This will be the VOC baseline that all future modifications to this permit unit that affect VOC emissions will be compared to determine if there is an emission increase or an emission increase for Regulation XIII offset and BACT requirements.

#### **Application No. 499660**

The company is requesting to add a piece of equipment (Cool Tank) to the permit description for the Resin Manufacturing System K-5 that is part of the system but was excluded from the previous description because it was declared to be 219 exempt. The previous VOC emission calculation for this manufacturing system included any VOC emission from this 219 exempt piece of equipment. Therefore, **there is no need to do a VOC emission calculation as a result of adding this piece of equipment to the permit description.**

#### **Application No. 499661**

The company is requesting to change the vapor pressure unit in condition no. 3 of Permit No. F96000 from pounds per square inch (psi) to mmHg at 68 degree Fahrenheit. Since the request does not involve changing the actual vapor pressure, there is **no change in VOC emission and therefore, there is no need to perform an emission calculation for this application.**

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### **Application No. 499662**

The company is requesting to increase the temperature of the material in Storage Tank TFX2 in condition no. 6. They are asking to increase the temperature from 120 degrees Fahrenheit to 200 degrees Fahrenheit. Increasing the temperature of the material in the tank will increase the VOC emission for working and breathing losses. Therefore, an emission calculation will be performed to determine the VOC emission increase from increasing the temperature of the material from 120 degrees to 200 degrees Fahrenheit.

The emission calculation will be performed using the “working loss equation” and the “breathing loss equation” shown below. The company has indicated the makeup of material that is stored in this tank is a combination of two solvents and other non-volatile materials. The permit has a condition that restricts the solvent content of the material in this storage to a maximum of 40% by weight. The company has also indicated in the application the venting of the storage tank is sent to an afterburner. Upon further investigation, this storage tank is NOT vented to an afterburner and therefore the emissions will be calculated based on venting to the atmosphere.

### **Physical Properties of Material in Tank TFX2:**

Materials in Storage Tank:

1. Naphthalene (36%)
2. Toluene (4%)
3. Resin (non-volatile) (60%)

Naphthalene	Vapor Pressure	0.1547 psia
	Molecular Wt.	131.6 lb/lb mol

Toluene	Vapor Pressure	1.6958 psia
	Molecular Wt.	92.1 lb/lb mol

### **Operational Parameters of Storage Tank**

Dimensions	Height; 14ft	Diameter; 8ft
Turnovers	5,000 gallons per day	34,500 gallons per year
Temperature	120 degrees Fahrenheit (old)	200 degrees Fahrenheit (new)

### **Working Loss and Breathing Loss Equation**

Breathing Loss Equation:  $L_B = V_o \times \Delta T / T_{Avg} \times 1/v \times P / 14.7 \times M_v$

Working Loss Equation:  $L_W = F_{max} \times 1 \text{ ft}^3 / 7.48 \text{ gal} \times 1 \text{ lb mole} / 380 \text{ ft}^3 \times M_v \times P / 14.7 \text{ psia}$

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Where:	Tank Diameter	(D)	=	8 ft
	Average Outage	(H)	=	14 ft
	Volume of vapor above the liquid surface	(Vo)	=	704 ft <sup>3</sup>
	Average daily temperature change	(ΔT)		30 °R/day
	Average daily temperature	(Tavg)		580 °R for 120 °F 660 °R for 200 °F
	Molecular weight	(Mv)		141.68 lb/lb mole
	True Vapor Pressure	(P)		0.1071 psia for 120 °F 0.3237 psia for 200 °F
	Molecular volume	(v)		423 ft <sup>3</sup> /lb mole for 120 °F 482 ft <sup>3</sup> /lb mole for 200 °F
	Maximum filling rate	(Fmax)		5,000 gal/day
	Average filling rate	(Favg)		5,000 gal/day
	Filling time	(t)		24 hr/day
	Turnover Rate	(tr)		7 per year

## Notes:

1. Data given by the applicant
2. If not given, H is estimated to be half of the tank height.
3.  $V_o = \pi \times D^2 / 4 \times H = 704 \text{ ft}^3$
4. Average daily temperature change is assumed to be 30°F
5. If mixture of organic is stored in the tank, Mv is estimated using Equation 4.3, and Equation 4.4, Section 4, Permit Processing Handbook, or use Tanks4.0.9d
6. If not given, P is from Appendix 4H, Section 4, Permit Processing Handbook.
7.  $v = 10.73 \text{ (ft}^3 \text{ psia/lb mole } ^\circ\text{R)} \text{ Tavg (} ^\circ\text{R)} \text{ (1/14.7 psia)}$
8. If not given, efficiency of vapor balance system is assumed to be 95%, sparger 90%, vapor recovery system 95%, and thermal oxidizer 95%.

**Breathing Loss and Working Loss @ 120 degrees Fahrenheit**

$$L_B = V_o \times \Delta T / T_{avg} \times 1/v \times P/14.7 \times M_v$$

$$L_B = 704 \text{ ft}^3 \times 30 \text{ } ^\circ\text{R} / 580 \text{ } ^\circ\text{R} \times 1/423 \text{ ft}^3/\text{lb mole} \times 0.1071 \text{ psia} / 14.7 \text{ psia} \times 141.68 \text{ lb/lb mole}$$

$$L_B = 0.089 \text{ lbs/day}$$

$$L_W = F_{max} \times 1 \text{ ft}^3/7.48 \text{ gal} \times 1 \text{ lb mole}/380 \text{ ft}^3 \times M_v \times P/14.7 \text{ psia}$$

$$L_W = 5,000 \text{ gal/day} \times 1 \text{ ft}^3/7.48 \text{ gal} \times 1 \text{ lb mole}/380 \text{ ft}^3 \times 141.68 \text{ lb/lb mole} \times 0.1071 \text{ psia}/14.7 \text{ psia}$$

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$$L_W = 1.8 \text{ lbs/day}$$

$$L_B + L_W = 0.089 + 1.8 = 1.889 \text{ lbs/day} \quad (\text{Uncontrolled @ } 120^\circ\text{F})$$

### **Breathing Loss and Working Loss @ 200 degrees Fahrenheit**

$$L_B = V_O \times \Delta T / T_{Avg} \times 1/v \times P/14.7 \times M_v$$

$$L_B = 704 \text{ ft}^3 \times 30^\circ\text{R} / 660^\circ\text{R} \times 1/423 \text{ ft}^3/\text{lb mole} \times 0.3237 \text{ psia} / 14.7 \text{ psia} \times 141.68 \text{ lb/lb mole}$$

$$L_B = 0.24 \text{ lbs/day}$$

$$L_W = F_{max} \times 1 \text{ ft}^3/7.48 \text{ gal} \times 1 \text{ lb mole}/380 \text{ ft}^3 \times M_v \times P/14.7 \text{ psia}$$

$$L_W = 5,000 \text{ gal/day} \times 1 \text{ ft}^3/7.48 \text{ gal} \times 1 \text{ lb mole}/380 \text{ ft}^3 \times 141.68 \text{ lb/lb mole} \times 0.3237 \text{ psia}/14.7 \text{ psia}$$

$$L_W = 5.49 \text{ lbs/day}$$

$$L_B + L_W = 0.24 + 5.49 = 5.73 \text{ lbs/day} \quad (\text{Uncontrolled @ } 200^\circ\text{F})$$

### **Comparison of emission at 120 °F and 200 °F**

$$\text{Breathing Loss Comparison: } 0.24 \text{ lbs/day} - 0.089 \text{ lbs/day} = 0.15 \text{ lbs/day}$$

$$\text{Working Loss Comparison: } 5.49 \text{ lbs/day} - 1.8 \text{ lbs/day} = 3.69 \text{ lbs/day}$$

$$\text{Combined Breathing \& Working Loss Comparison: } 5.73 \text{ lbs/day} - 1.89 \text{ lbs/day} = 3.84 \text{ lbs/day}$$

$$30 \text{ Day Average} = 0.15 \text{ (uncontrolled)} + 3.69 \times (1-0.95) \text{ (controlled)} = 0.33 \text{ lbs/day} \quad \text{increase}$$

### **Application No. 499663**

The company is requesting to:

1. Add four (4) additional toxic air compounds to the existing list of compounds.
2. Increase the throughput of material in Tank 406 and 407.

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**ITEM 1 - The new toxic air contaminants are:**

Ethyl Benzene  
Ethylene Glycol  
Formaldehyde  
Methyl Methacrylate

Methyl Methacrylate is listed in the 1401 toxic air contaminant table under the chronic health index column but it is listed with a notation that this compound is proposed by the Office of Environmental Health Hazard Assessment (OEHHA) and has not yet been finalized. Therefore, it cannot be evaluated as a 1401 emission at this time. It was however evaluated as a VOC in the previous evaluation in Application No. 433524.

The remaining three compounds: Ethyl benzene is a carcinogenic risk and a chronic risk  
Ethylene glycol is a chronic risk and,  
Formaldehyde is a carcinogenic, chronic, and acute health risk.

The previous evaluation (Application No. 433524) indicated the emissions from Tank 406 and 407 were calculated based on the assumption that the material with the highest vapor pressure would be the sole material in the tank to determine maximum emission. The material in the previous evaluation (see copy of evaluation in Appendix) that had the highest vapor pressure was Methyl Methacrylate.

Therefore, to determine if there will be an increase in emission from the use of any one of the new materials in either tank the vapor pressure will be compared to that of Methyl Methacrylate.

<b>Material</b>	<b>Vapor Pressure @ 68°F</b>
Ethyl Benzene	0.1305 psia
Ethylene Glycol	0.0011 psia
Formaldehyde	0.025 psia
<b>Methyl Methacrylate</b>	<b>0.561 psia</b>

It has also been stated in the company's evaluation that the use of Methyl Methacrylate is always used in greater quantities than any of the other three materials in their product line. Therefore, greater quantities of the lower vapor pressure material will not occur which substantiates no increase in emission from the addition of these three new compounds.

The vapor pressure for each new material is lower than that of Methyl Methacrylate. Therefore, it is reasonable to conclude that the introduction of any one of these compounds into these tanks will **NOT** cause an increase in VOC emission from this system.

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## ITEM 2 – Material Throughput Increase of Tank 406 and 407

The company is requesting to increase the material throughput of Tank 406 from 100,000 gallons per year or 8,333 gallons per month to **216,000 gallons per year or 18,000 gallons per month.**

The company is also requesting to increase the material throughput of Tank 407 from 7,300 gallons per year or 608 gallons per month to **18,000 gallons per year or 1,500 gallons per month.**

To calculate the emission increase from the increase in throughput, the TANKS 4.0.9d program is used to compare the emissions from each tank for each throughput. All four of the Tanks 4.0 reports can be seen in the Appendix.

### SUMMARY OF EMISSION INCREASE FROM THROUGHPUT INCREASE

Operational parameters: 1 batch/day  
10 batches/month

Throughput	Tank 406		
216,000 gal/yr(new)	86.78 lb/yr	Working loss = 71.00 lb/yr	Breathing loss = 15.77 lb/yr
100,000 gal/yr(old)	<u>71.15 lb/yr</u>	Working loss = <u>55.37 lb/yr</u>	Breathing loss = <u>15.77 lb/yr</u>
Emission Increase	15.63 lb/yr	15.63 lb/yr	00.00 lb/yr

Throughput	Tank 407		
18,000 gal/yr (new)	10.92 lb/yr	Working loss = 7.43 lb/yr	Breathing loss = 3.49 lb/yr
7,300 gal/yr (old)	<u>9.39 lb/yr</u>	Working loss = <u>5.90 lb/yr</u>	Breathing loss = <u>3.49 lb/yr</u>
	1.53 lb/yr	1.53 lb/yr	00.00 lb/yr

TOTAL INCREASE 15.63 + 1.53 = **17.16 LB/YR**

Assuming Steady State Operation:

The daily VOC emission from the increase of the yearly and monthly throughput will not be affected since the daily turnover rate will remain the same; one (1) turnover per day.



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The monthly VOC emission from the increase of the yearly and monthly throughput **WILL** have an effect on the 30 day average emission since the number of monthly turnover will increase.

### Monthly and 30 Day Average VOC Emission Calculation

<b>Tank 106</b>	Annual Turnovers (new)	125	Monthly Turnovers	10.42
	Annual Turnovers (old)	58	<u>Monthly Turnovers</u>	<u>4.83</u>
			Monthly Increase	5.59 turnovers
<b>Tank 107</b>	Annual Turnovers (new)	87	Monthly Turnovers	7.25
	Annual Turnovers (old)	36	<u>Monthly Turnovers</u>	<u>3.00</u>
			Monthly Increase	4.25 turnovers

To determine the monthly emission increase, I have determined what the emission rate is per turnover based on the new throughput and then multiply that value by the number of turnovers per month based on the difference between the new throughput and the old throughput.

VOC emission per turnover (tank 106)	71.00 lb/year / 125 turnovers/yr = 0.57 lbs/turnover
VOC emission per turnover (tank 107)	7.43 lb/year / 87 turnovers/yr = 0.0854 lbs/turnover

**Therefore,**

Tank 106	5.59 turnovers/month X 0.57 lbs/turnover =	3.19 lbs/month increase
<u>Tank 107</u>	<u>4.25 turnovers/month X 0.0854 lbs/turnover =</u>	<u>0.363 lbs/month increase</u>
<b>Monthly Increase</b>		<b>3.55 lbs/month</b>

**30 Day Average** = 3.55 lbs/month / 30 days/month = **0.12 lbs/day**

### Application No. 499664

The company is requesting to:

Change number of hours the tank is allowed to be at 160 degrees Fahrenheit. The hours will increase from 240 per year to 1,040 per year and 20 hours per month to 20 hours per week. The material is heated to allow it to flow with less effort during shipment and delivery operations.

To determine the VOC emission increase from material in the tank being heated for a longer period of time, the TANKS 4.0 program will be used. A comparison of emission will be made between the materials being heated

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at 160 degrees Fahrenheit for 1,040 hours per year versus a storage tank heated at 160 degrees Fahrenheit for 240 hours per year.

The Tanks 4.0 program was ran twice, one with the temperature of the material at ambient, the other with the temperature of the material at 160 degrees Fahrenheit. The result of these two programs is shown below:

**Emission Summary Report  
(Ambient Temperature)**

<b>Tank Contents</b>	<b>Working Loss Lbs/year</b>	<b>Breathing Loss Lbs/year</b>	<b>Total Emissions Lbs/year</b>
<b>AJ-61 Composite</b>	<b>10.90</b>	<b>0.91</b>	<b>11.82</b>
1,2,4-Trimethylbenzene	1.27	0.11	1.37
Aromatic Naphtha	4.16	0.35	4.51
Mineral Spirits	5.47	0.46	5.93
Nonvolatile Liquids	0.00	0.00	0.00

**Emission Summary Report  
(160° F Temperature)**

<b>Tank Contents</b>	<b>Working Loss Lbs/year</b>	<b>Breathing Loss Lbs/year</b>	<b>Total Emissions Lbs/year</b>
<b>AJ-61 Composite</b>	<b>40.70</b>	<b>0.00</b>	<b>40.70</b>
1,2,4-Trimethylbenzene	22.69	0.00	22.69
Aromatic Naphtha	6.93	0.00	6.93
Mineral Spirits	11.08	0.00	11.08
Nonvolatile Liquids	0.00	0.00	0.00

**Comparison of Emission for 240 hours per year heating time versus 1,040 hours per year heating time**

Data: Annual Hours = 8760 hrs  
Yearly Emission (ambient) = 11.82 lbs  
Yearly Emission (160° F) = 40.70 lbs

$(\text{Unheated Annual Emission}/(\text{hrs}/\text{yr})) \times (\text{unheated hrs}/\text{annual hrs}) + (\text{Heated Annual Emission}/(\text{hrs}/\text{yr})) \times (\text{Heated hrs}/\text{annual hrs})$

$((11.82 \text{ lbs}/\text{yr})/8760 \text{ hrs}/\text{yr}) \times (8520 \text{ hrs}/8760 \text{ hrs}) + ((40.70 \text{ lbs}/\text{yr})/8760 \text{ hrs}/\text{yr}) \times (240/8760) =$

$0.001349 \text{ lbs}/\text{hr} \times 0.973 + 0.00465 \text{ lbs}/\text{hr} \times 0.0274 =$

$0.0013125 \text{ lb}/\text{hr} + 0.0001274 \text{ lbs}/\text{hr} =$

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**0.0014 lbs/hr (240 hrs of heating)**

$((11.82 \text{ lbs/yr})/8760 \text{ hrs/yr}) \times (7720 \text{ hrs}/8760 \text{ hrs}) + ((40.70 \text{ lbs/yr})/8760 \text{ hrs/yr}) \times (1040/8760) =$

$0.001349 \text{ lbs/hr} \times 0.881 + 0.00465 \text{ lbs/hr} \times 0.1187 =$

$0.001188 \text{ lbs/hr} + 0.00055 \text{ lb/hr} =$

**0.0017 lbs/hr (1,040 hrs of heating)**

**The emission increase from increasing the hours of heating the storage tank from 240 hours per year to 1,040 hours per year is:**

**$0.0017 \text{ lbs/hr} - 0.0014 \text{ lbs/hr} = 0.0003 \text{ lbs/hr}$**

**VOC emission increase =   0.0003 lbs/hr  
                                      0.0003 lbs/day  
                                      0.009 lbs/month**

#### **Application No. 499670**

The company is requesting to:

Change the temperature of the combustion chamber for the afterburner from 1450 degrees Fahrenheit to 1400 degree Fahrenheit.

The company had originally requested a change of conditions to allow several source tests on the afterburner while in operation at temperatures between 1250°F and 1400°F so they could determine the control efficiency of the afterburner at different combustion temperatures. This data would then be used to decide which temperature the afterburner could operate in order to achieve a specified reduction in VOC emission from their operation.

The District informed the company that this request could not be granted because Regulation XIII BACT requirement specifies a minimum operating temperature of 1400°F for the afterburner.

Thereafter, the company modified their request to have the current permit condition of 1450°F lowered to 1400°F as stated in a previous source test. The company was not aware of any reasons why they had to operate at 1450°F when the source test results were measured at 1400°F. Also, the company would save a great deal of money on gas usage if they could operate at a lower temperature.

As I reviewed their source test, I also did a search of the pervious permits that had been issued to this afterburner with reference to the combustion temperature condition. I found that the first permit for this afterburner was issued on February 7<sup>th</sup> 1980. This permit (# M09864) was issued with a temperature condition of 1400°F. There was no engineering evaluation in the liberty system. The next permit that was issued for this afterburner was on June 15<sup>th</sup> 1984. This permit (# M38985) also stated 1400°F and there was also no

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engineering evaluation in the liberty system. The next permit (# M43489) that was issued was on July 19<sup>th</sup> 1985 and it also had the 1400°F condition and there was no engineering evaluation in the liberty system. The permit that followed (# M49538) was issued on May 12<sup>th</sup> 1986 and it had the same 1400°F condition. An engineering evaluation was found for this permit. The evaluation did not mention any changes to the 1400°F condition and so it remained on the permit.

On October 10, 1986 the District conducted a source test on the afterburner to determine compliance with Rule 1141. The test result indicated that the afterburner was operating at 99.8 percent destruction efficiency. The source test report did not mention the temperature of the combustion chamber, but one would assume that since the permit on file at the time of the source test required that the afterburner operate at a temperature of not less than 1400 degrees Fahrenheit, the source test was conducted at this temperature.

On March 19, 1999, another source test was found in the file. This source test was conducted using AQMD methods but was never reviewed by the District Source Test Team. The results of the source test indicated that the afterburner was operating at 1400 degrees Fahrenheit and the destruction efficiency was 98.7 percent.

The next permit issued to the afterburner was permit no.F20947. This permit was issued with a permit condition of 1450°F. This permit was issued on June 18<sup>th</sup> 1999. As I reviewed the evaluation for this permit I did NOT find any discussion or reasons why the condition was changed from 1400°F to 1450°F. The supplemental information that the company provided for the afterburner in this application stated that the operating temperature was 1400°F.

The last permit that was issued for this afterburner was permit no. F99080. This permit was issued on October 11<sup>th</sup> 2007. It also had a condition of 1450°F as the operating temperature. A summary of the chronology of permits issued and the corresponding temperature permit condition is shown below:

Date	Application	Permit	Operating Condition
Feb 7, 1980	C-20144	M09864	1400 degrees F
June 15, 1984	118981	M-38985	1400 degrees F
July 19, 1985	126530	M-43489	1400 degrees F
May 12, 1986	134463	M-49538	1400 degrees F
June 18, 1999	355246	F-20947	1450 degrees F
Sept 18, 2008	474442	F99080	1450 degrees F

All of the permits and source test reports can be viewed in the Appendix.

It has been shown that this afterburner was originally permitted with an operating condition of 1400 degrees Fahrenheit which was the standard operating condition put on afterburners at that time and is still in practice today. There are no circumstances mentioned in any of the engineering evaluations from June 18<sup>th</sup> 1999 to today that justify or warrant a change of the operating conditions from 1400 degree to 1450 degrees Fahrenheit.

Therefore, it is a reasonable request by the company to have the permit operating condition for their afterburner changed from 1450 degrees Fahrenheit to 1400 degrees Fahrenheit.

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There is no reason to do any emission calculations since the process equipment was originally controlled by this afterburner at a temperature of 1400 degrees Fahrenheit. When the operating temperature got changed from 1400 to 1450 degree Fahrenheit, the District actually got a benefit in emission reduction from the higher operating temperature and thus higher destruction efficiency. Since this temperature increase was not warranted by a rule requirement the company should not be penalized for an increase of emission level by lowering the operating temperature back to the original value.

### RULE EVALUATION:

#### **Rule 212: Standards for Approving Permits –**

- (c)(1) The closest school to this facility is Local District 6 facility which is located 0.22 miles as the crow flies. The distant in feet is  $(.22 \text{ mi}) \times (5,280 \text{ ft/mi}) = 1162 \text{ feet}$ . Since this is less than 1000 feet, a public notice is not required. A map and printout of the closest school K-12 near this location is shown in the Appendix.
- (c)(2) This facility will **not** have on-site emission increases exceeding any of the daily maximums specified in subdivision (g) of this rule. Those limits are:

Air Contaminant	Daily Maximum in lbs per Day
Volatile Organic Compounds	30
Nitrogen Oxides	40
PM <sub>10</sub>	30
Sulfur Dioxide	60
Carbon Monoxide	220
Lead	3

- (c)(3)(A)(i) This facility will have an increase in emissions of toxic air contaminants and a determination has been made that the maximum individual cancer risk of each toxic air contaminant is **less than one in a million** during a lifetime and that the total facility-wide maximum individual cancer risk is **less than ten in a million** using the risk assessment procedures and toxic air contaminants specified under Rule 1402.

**Rule 401: Visible Emissions** - Visible emissions are not expected from any of the changes that have been made inclusive of the applications under this evaluation. There is no particulate emission associated with any of the modifications, change of condition or administrative changes. Therefore, compliance with this rule is expected.

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**Rule 402:**      **Public Nuisance** - The VOC emission increase from the changes that have occurred from the modifications, change of condition or administrative changes is insignificant and should not cause an increase risk for a nuisance. Therefore, compliance with this rule is expected.

**Rule 1141:**      **Control of Volatile Organic Compound Emissions from Resin Manufacturing –**

(b) Requirements

- (1) A resin manufacturer shall not manufacture organic resin unless the total emissions of volatile organic compounds (VOC), from the organic resin reactor, thinning tank and blending tank vents, before being vented to the atmosphere, are reduced:
  - (A) to 0.5 pound per 1000 pounds of completed resin produced, or
  - (B) by 95 percent or more.
- (2) A resin manufacturer shall not manufacture organic resin by a continuous polystyrene process unless the total emissions of VOC from vacuum devolatilizer system and styrene recovery system, before being vented into the atmosphere, are reduced to 0.12 pound per 1000 pounds of completed resin produced.
- (3) A resin manufacturer shall not manufacture organic resin by a liquidphase high-density polyethylene slurry process unless the total emissions of VOC from the organic resin reactor, recycle treaters, thinning tank, blending tank and product finishing section, before being vented to the atmosphere are reduced by 98 percent or more.
- (4) A resin manufacturer shall not manufacture organic resin by a liquidphase polypropylene process unless the total emissions of VOC from the organic resin reactor, slurry vacuum filter system, diluent recovery section, and product finishing section vents, before being vented to the atmosphere, are reduced by 98 percent or more.

The two applications (499658 and 499663) that were submitted for a modification and change of condition to the K-3 Resin Manufacturing System and the K-1 Resin Manufacturing System respectively are subject to Rule 1141 rule requirements. The VOC emissions from both of these systems are vented to a thermal oxidizer that has been source tested. The source test was shown to have an overall control efficiency of 98.7% (see Appendix). Therefore, compliance with section (b)(1)(B) of this rule has been met.

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**Reg XIII:      RULE 1303. REQUIREMENTS (BACT)**

(a) Best Available Control Technology (BACT):

- (1) The Executive Officer or designee shall deny the Permit to Construct for any relocation or for any new or modified source which result in an emission increase of any non attainment air contaminant, any ozone depleting compound, or ammonia, unless BACT is employed for the new or relocated source or for the actual modification to an existing source.

**The only application that had an emission increase due to a change of condition or modification that was greater than 1 lb/day is the following application:**

**Application No. 499662 (Storage Tank TFX2)**

The change of condition to increase the temperature of the material in Tank TFX2 from 120 degrees Fahrenheit to 200 degrees Fahrenheit will cause VOC emission to increase by 3.84 lbs/day. Any emission increase of 1 lb/day or more is subject to BACT review. The BACT guidelines indicate for a fixed roof storage tank, BACT is "Vapor Recovery System with an Overall System Efficiency of 95%". The company has indicated in an email (see Appendix) that a vapor recovery system will be in place during times of unloading and loading. A condition will be added to the permit to insure that during loading and unloading of material from this tank a vapor recovery system shall be in operation. Compliance with BACT is expected.

**RULE 1303 REQUIREMENTS (OFFSET)**

- (b) The Executive Officer or designee shall, except as Rule 1304 applies, deny the Permit to Construct for any new or modified source which results in a net emission increase of any nonattainment air contaminant at a facility, unless each of the following requirements is met:

(2) Emission Offsets

- (A) Emission Reduction Credits Unless exempt from offsets requirements pursuant to Rule 1304, emission increases shall be offset by either Emission Reduction Credits approved pursuant to Rule 1309, or by allocations from the Priority Reserve in accordance with the provisions of Rule 1309.1, or allocations from the Offset Budget in accordance with the provisions of Rule 1309.2. Offset ratios shall be 1.2-to-1.0 for Emission Reduction Credits and 1.0-to-1.0 for allocations from the Priority Reserve, except for facilities not located in the South Coast Air Basin (SOCAB), where the offset ratio for Emission Reduction Credits only shall be 1.2-to-1.0 for VOC, NO<sub>x</sub>, SO<sub>x</sub> and PM<sub>10</sub> and 1.0-to-1.0 for CO.

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The offset requirement shall be determined by combining the 30 day average from each application that is subject to this requirement. A summary of each 30 day average for each application is shown below:

<b><u>Application No. 499658</u></b>	Modification of Resin Manufacturing System (RMS) No. 3 <b>NO EMISSION INCREASE</b>
<b><u>Application No. 499660</u></b>	Administrative change to Latex Emulsion Polymerization system K-5 <b>NO EMISSION INCREASE</b>
<b><u>Application No. 499661</u></b>	Administrative change to Storage Tank T-802 <b>NO EMISSION INCREASE</b>
<b><u>Application No. 499662</u></b>	Change of condition to Storage Tank TFX2 <b>0.33 lbs/day (30 day average)</b>
<b><u>Application No. 499663</u></b>	Change of condition to Alkyd-Vinyl Copolymerization system <b>0.12 lbs/day (30 day average)</b>
<b><u>Application No. 499664</u></b>	Change of condition to Storage Tank T-904 <b>0.0003 lbs/day (30 day average)</b>
<b><u>Application No. 499670</u></b>	Change of condition to Air Pollution Control System <b>NO EMISSION INCREASE</b>

The total increase of VOC emission from each of the applications under this evaluation is:

<b><u>Application No. 499658</u></b>	<b>0</b>
<b><u>Application No. 499660</u></b>	<b>0</b>
<b><u>Application No. 499661</u></b>	<b>0</b>
<b><u>Application No. 499662</u></b>	<b>0.33 lbs/day (30 day average)</b>
<b><u>Application No. 499663</u></b>	<b>0.12 lbs/day (30 day average)</b>
<b><u>Application No. 499664</u></b>	<b>0.0003 lbs/day (30 day average)</b>
<b><u>Application No. 499670</u></b>	<b>0</b>
<b>TOTAL</b>	<b>0.4503 lbs/day (30 day average)</b>

The total is less than 0.5 pounds per day and therefore, no offsets are required under this rule.

#### **Rule 1313      Permits To Operate –**

(g) Emission Limitation Permit Conditions

Every permit shall have the following conditions:

- (1) Identified BACT conditions;
- (2) Monthly maximum emissions from the permitted source.



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A monthly maximum emission limit has been established for the Resin Manufacturing System K-3. This permit unit has been operating since inception without any operational limits on production and consequently no restriction on their potential VOC emission output. A VOC emission limit was established using historical production data and calculating the corresponding VOC emission level. These calculations can be viewed in the Calculation Section of this evaluation. A condition limiting the operation of the K-3 Resin Manufacturing System to **225 lbs of VOC per month** will be added to the list of conditions for this permit unit.

#### **Rule 1401**

**New Source Review Of Toxic Air Contaminants** - This rule specifies limits for maximum individual cancer risk (MICR), cancer burden, and non cancer acute and chronic hazard index (HI) from new permit units, relocations, or modifications to existing permit units which emit toxic air contaminants listed in Table I of this regulation.

The company has requested in Application No. 499663 to add four additional TAC to the permit for the Alkyd-Vinyl Copolymerization System. These three TAC's are:

Ethyl Benzene  
Ethylene Glycol  
Formaldehyde  
Methyl Methacrylate

As mentioned earlier in the Emission Calculation section, Methyl Methacrylate is listed in the 1401 toxic air contaminant table under the chronic health index column but it is listed with a notation that this compound is proposed by the Office of Environmental Health Hazard Assessment (OEHHA) and has not yet been finalized. Therefore, it cannot be evaluated as a 1401 emission at this time.

The remaining three compounds that will be evaluated for risk are:

<b><u>Compound</u></b>	<b><u>Category</u></b>
Ethyl benzene:	<b>carcinogenic risk and a chronic risk,</b>
Ethylene glycol:	<b>chronic risk and,</b>
Formaldehyde:	<b>carcinogenic, chronic, and acute health risk.</b>

The company has indicated in their application that the emission of VOC and toxic compounds is based on one batch per day. The company had originally calculated their toxic emission on a batch size of 750 gallons. In an email (dated 8-24-09) the company indicated that a typical batch is 1,350 gallons. Therefore, our calculations will be based on a 1,350 gallon per day batch.

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The company has indicated that there are four separate occasions during the processing of the batch when toxic emission is released. These four occasions are:

- 1.) During the release of the nitrogen blanket from the Thin Down Tanks
- 2.) During the loading into the Thin Down Tanks
- 3.) During the mixing in the Thin Down Tanks, and
- 4.) During the product filling of the batch material.

The company has provided an emission factor for each toxic compound and for each step in the process when it is emitted. These emission factors are based on pounds of emission per gallon of material in a batch. The emission from the first three processes above is subject to control from the afterburner while the fourth process is not vented to the afterburner and is thus uncontrolled. Each emission factor does reflect whether the emission is controlled or uncontrolled

The following table shows each process where the toxic emission is released, the emission factor, and the resultant emission:

Compound	Nitrogen Blanket lbs/gal	Thindown Loading lbs/gal	Thindown Mixing lb/gal	Product Filling lb/gal	Total Emission lbs/gal
Ethylbenzene	8.51 E-05	6.76E-07	1.62E-06	2.69E-05	<b>1.1E-04</b>
Ethylene Glycol	3.17E-07	2.52E-09	7.24E-09	4.04E-08	<b>3.67E-7</b>
Formaldehyde	5.85E-08	4.65E-10	1.70E-09	1.86E-08	<b>7.93E-8</b>

Operational Data: 1 batch per day  
1,350 gallons/batch  
12 hrs/batch

### Toxic Emission Calculation

EF x Batch / hourly rate = Emission (lb/hr)

#### ETHYLBENZENE

1.1E-04 lb/gal x 1,350 gal/batch / 12 hr/batch = **0.012 lbs/hr**

#### ETHYLENE GLYCOL

3.67E-07 lb/gal x 1,350 gal/batch / 12 hr/batch = **0.0000413 lbs/hr**

#### FORMALDEHYDE

7.93E-08 lb/gal x 1,350 gal/batch / 12 hr/batch = **0.00000892 lbs/hr**

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The emission rate values calculated above are used in the 1401 Screening Risk Assessment program to determine the carcinogenic, chronic and acute risks. The results of that screening can be found in the Appendix at the end of this evaluation. Both the Cancer Risk and Hazard Index screenings **did not result in a risk** greater than the screening levels and therefore, the use of these compounds will be in compliance with this rule. A summary of the screening risks are shown below:

### Cancer Risk

Compound	Residential <b>MICR</b>	Commercial <b>MICR</b>
Ethyl Benzene	2.25E-08	7.70E-09
Formaldehyde	4.44E-11	1.38E-11
<b>Total</b>	<b>2.26E-08</b> <b>PASS</b>	<b>7.71E-09</b> <b>PASS</b>

### Hazard Index

	Acute	Chronic	Acute	Chronic
Alimentary system (liver)		4.46E-06	<b>Pass</b>	<b>Pass</b>
Developmental – DEV		4.54E-06	<b>Pass</b>	<b>Pass</b>
Endocrine system – END		4.46E-06	<b>Pass</b>	<b>Pass</b>
Eye	1.90E-06	2.21E-06	<b>Pass</b>	<b>Pass</b>
Immune system – IMM	1.90E-06		<b>Pass</b>	<b>Pass</b>
Kidney – KID		4.54E-06	<b>Pass</b>	<b>Pass</b>
Respiratory system – RES	1.90E-06	2.29E-06	<b>Pass</b>	<b>Pass</b>

Reg XXX: **TITLE V - NEW SOURCE REVIEW** - This facility is subject to the Title V Program because of the use of VOC containing compounds whose emission have exceeded threshold limits. A copy of the Annual Emission Report for year 2001 indicates that the company reported ROG emission greater than 10 tons (See Appendix). The modifications to this equipment will have monitoring and record keeping requirements as specified by the Title V Program in their permit conditions. Compliance with their requirements is expected.

The modifications to this equipment does qualify as a Minor Permit Revision and therefore requires that the Title V Permit is submitted to EPA for a 45 day notice. If no unfavorable comments are received from EPA, the permits will be approved and issued to the company.

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## **CONCLUSIONS/RECOMMENDATIONS**

The evaluation of each of the following applications and the request to make changes to the existing permits are expected to comply with all District Rules and Regulations. Permit conditions have been imposed on each permit to insure continued compliance with District Rules and Title V requirements is maintained as a result of the requested changes. A summary of each action is shown below:

- Application No. 499658** Modification of Resin Manufacturing System (RMS) No. 3. Company has added five (5) pieces of equipment to the RMS No.3 system which will allow the company to process a new resin called "Coalescer". **Recommend a Permit to Construct/Operate.**
- Application No. 499660** Administrative change to Latex Emulsion Polymerization system K-5. The company will add a "cool tank" to the permit description. This equipment is exempt from a written permit per Rule 219 but the company has requested it to be part of the permit description. **Recommend a Permit to Operate.**
- Application No. 499661** Administrative change to Storage Tank T-802. The vapor pressure notation will be changed from "psi" to "mmHg" at 68 degrees in condition No. 3. **Recommend a Permit to Operate.**
- Application No. 499662** Change of condition to Storage Tank TFX2. The temperature of the material inside this tank will be increased from 120 degrees Fahrenheit to 200 degrees Fahrenheit in condition No. 6. **Recommend a Permit to Operate.**
- Application No. 499663** Change of condition to Alkyd-Vinyl Copolymerization system. The company will add four (4) additional toxic air contaminants (TAC) to condition No. 4. The company will also increase the annual throughput of Tank 406 and 407 from 100,000 gallons per year to **216,000 gallons per year and 7,300 gallons per year to 18,000 gallons per year respectively.** **Recommend a Permit to Operate.**
- Application No. 499664** Change of condition to Storage Tank T-904. The company will change the number of hours the tank is allowed to be at 160 degrees Fahrenheit. The hours will increase from 240 per year to 1,040 per year and 20 hours per month to 20 hours per week. **Recommend a Permit to Operate.**
- Application No. 499670** Change of condition to Air Pollution Control System. The company will lower the temperature in the combustion chamber of the thermal oxidizer from 1450 degrees Fahrenheit to 1400 degrees Fahrenheit in condition No. 3. **Recommend a Permit to Operate.**